

REMARKS

Claims 1-64 are pending in this application. Claims 1-44, 47, 48, 52, and 59-64 are rejected. Claims 1-44, 47, 48, 52, and 59-64 are objected to. Claims 45, 50, and 53-58 are withdrawn. By this amendment, claims 1, 2, 4, 5, 8, 11, 16, 28, 32, 36, 38, 42, 47-49, 60, and 63, are amended, claims 3, 6, 7, 9, 10, 12, 13, 15, 19, 25-27, 30, 31, 33-35, 37, 39-41, 43, 44, 52, 59, 61, and 64 are canceled, claims 46 and 51 are withdrawn, and new claims 65 and 66 are added. Applicant has canceled the above mentioned claims in order to pursue the subject matter of those claims in U.S. Patent Application Ser. No. 10/467,241, which is the parent to the present application.

Objections to the Drawings

The drawings are objected to for failing to include the reference signs 194 and 318, which are mentioned in the written description. Figure 13 is further objected to for using elements 314 and 316 to each designate two different portions of the ferrule. Figure 8 has been amended to include element 194. Figure 13A has been amended to include element 318 and to remove the multiple use of reference signs 314 and 316. Replacement sheets illustrating the corrected Figure 8 and Figure 13A are included with this amendment.

Objections to the Specification

The disclosure is objected to for incorporating by reference two U.S. patent applications without providing the respective patent numbers for the issued patents. The specification has been amended to include the respective patent number for U.S. Patent Application 09/469,549. Applicant respectfully points out, however, that U.S. Patent Application 10/358,946 has not yet issued as a patent. Therefore, no amendment to the specification is required in this regard.

The specification was further objected to for failing to supply proper antecedent basis for the subject matter of claim 49. Claim 49 has been amended such that the specification provides the proper antecedent basis at page 13, lines 8-11.

Objections to the Claims

Claims 1, 28, 30, 31, 34, and 64 are objected to for using a preamble inconsistent with the language in the body of the claims. Claims 26, 30, 31, 34, 43, and 64 are canceled and the

preamble of claims 1 and 28 is amended to be consistent with the language in the body of the claims. In addition, claims 2, 4, 5, 8, 32, 36, 38, 42, 47-49 are amended to be consistent with the language of amended claims 1 and 28.

Claim 28 is further amended to correct the informality set forth in the Office Action.

Claim Rejections - 35 USC § 112

Claims 1-27, 31-44, 47-49, and 59-64 are rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the use of the phrase "at least about" in claims 1, 31, 34, and 64 is objected to. Claims 9, 26, 31, 34, and 64 are canceled and claims 1 and 16 are amended to discontinue use of the phrase "at least about."

Claim 4 is rejected for under 35 USC § 112, second paragraph, as being indefinite for using the term "narrow." Claim 4 is amended to remove the term "narrow."

Claim Rejections - 35 USC § 102

The Office Action rejected claim 30 as being anticipated by Kowal, et al. (USPN 4,556,242). Claim 30 is canceled with the intent to pursue the subject matter in the parent application.

Claim Rejections - 35 USC § 103

The Office Action rejected claims 1-8, 11-25, 27-29, 52, and 62 as being unpatentable over Kowal et al. in view of Bradley (USPN 2,561,648). The Office Action rejected claims 9, 10, 31, 32, 60, 61, and 63 as being unpatentable over Kowal et al. in view of Bradley and further in view of Moreiras et al. (USPN 3,893,716). The Office Action rejected claims 26 and 33 as being unpatentable over Kowal et al. in view of Bradley, Moreiras et al., and further in view of Sugiyama et al. (USPN 5,934,714). The Office Action rejected claim 64 as being unpatentable over Kowal et al. in view of Bradley, and Sugiyama et al. The Office Action rejected claims 34-44 and 47-49 as being unpatentable over Kowal et al. in view of Moreiras et al. The Office Action rejected claim 59 as being unpatentable over Kowal et al. in view of Bradley, Moreiras et al., and further in view of Sugiyama et al. By this amendment, claims 3, 6, 7, 9, 10, 12, 13, 15, 19, 25-27, 31, 33-35, 37, 39-41, 43, 44, 52, 59, 61, and 64 are canceled.

Claim 1

Applicant respectfully submits that claim 1, as amended, is not rendered obvious by the proposed combination because the combination fails to teach or suggest all of the elements of the claim as required to establish a *prima facie* case of obviousness.

Claim 1, as amended, recites, in part, that “said cylindrical interior wall including a portion that deforms to form a convex portion in a longitudinal section that is axially spaced from said ferrule front edge; wherein said ferrule radially compresses against said tube end with a compressive stress that decreases in a generally axial direction away from said front edge along the entire length of said interior wall.” Kowal teaches a ferrule that when pulled up has a nose portion 29 that bites into the tube end and a deformable ring portion 30 that deforms radially inward to project into the outer surface of the tube wall (see col. 5, lines 50). The deformable ring portion 30 defines a support of the tube end axially outward from the constricted nose portion to block the transmission of vibration forces axially inward along the tube to the biting edge 29 (see col. 5, lines 11-16). Thus, Kowal et al. does not teach a compressive stress that decreases in a generally axial direction away from said front edge along the entire length of said interior wall, as recited in claim 1. Kowal teaches the opposite by creating a radially compressed portion at the back end of the ferrule in order to isolate vibration.

Applicant respectfully submits that claim 1, along with the claims that depend therefrom are in condition for allowance.

Claim 28

Applicant respectfully submits that claim 28, as amended, is not rendered obvious by the proposed combination because there is no motivation to combine Kowal et al. and Bradley to provide a camming surface having the angle disclosed by Bradley.

As acknowledged in the Office Action, Kowal et al. discloses a tube fitting but does not disclose a camming surface at the angle recited in claim 28. Bradley discloses a pipe fitting with conical faces inclined at 45 degrees. Bradley utilizes these conical faces to deform a soft metal or plastic inner component against the surface of the pipe to form two fluid seals between the pipe and the union and nut (col. 2., lines 29-33 and Fig. 3). The fitting described in Bradley does not appear to cause the inner component to indent into pipe. Thus, Bradley does not teach or

suggest utilizing the conical faces inclined at 45 degrees to urge the front edge of a ferrule into a tube end.

Changing the camming angle greatly affects many factors of a tube fitting, such as tube grip, seal integrity, deformation of the ferrule, and deformation of the tube. As discussed in Applicant's previous response and explained in Applicant's specification, shallow camming angles of between ten and twenty degrees are employed in prior art fittings for metal tubes, such as stainless steel tubes. Specification, page 4, line 32 - page 5, line 15. A camming angle between ten and twenty degrees provided the mechanical advantage required to create an adequate bite for tube grip of a metal tube. Id. The mechanical advantage provided by the claimed camming angle of about thirty-five degrees to about sixty degrees is significantly less than the mechanical advantage provided by a prior art metal fitting camming angle between ten and twenty degrees. The higher mechanical advantage motivates those skilled in the art to employ camming angles between ten and twenty degrees, as shown in Kowal, et al., not thirty-five to sixty degrees in fittings for metal tubes. Thus, even though Bradley discloses a pipe fitting with conical faces inclined at 45 degrees, because the use of the conical faces in Bradley differs greatly from the use of the camming surface in Kowal et al., one of ordinary skill in the art would not look toward the fitting in Bradley to modify the camming angle in Kowal et al. Prior art references must be considered in their entirety, MPEP §2141.02, and Applicant respectfully submits that the references do not explicitly or implicitly suggest that that an angle of between 30 and 45 degrees would enhance the fitting of Kowal et al. in any way.

Applicant also respectfully points out that the Office Action provides no factual basis for the assertion that an angle of between 30 and 45 degrees would provide a more secure coupling for an inserted metal tube by optimizing the compressive forces between the ferrule and the camming surface as suggested in the Office Action at page 8. See In re Lee, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references). Applicant respectfully submits that the combination of Kowal et al. and Bradley is "hindsight" because motivation to combine these references is lacking in the references and the knowledge generally available to those skilled in the art. MPEP 2145.

Applicant respectfully submits that claim 28, along with the claims that depend therefrom are in condition for allowance.

Newly Added Claims

Newly added claims 65 and 66 are fully supported by the specification and are patentable over the art of record. Claims 65 and 66 depend from claims 1 and 28, respectively, and are patentable over the cited art, at least by their dependency to claims 1 and 28.

CONCLUSION

Based on the foregoing amendments and remarks, Applicant believes that all of the claims in this case are now in condition for allowance and an indication to that effect is respectfully requested.

Respectfully submitted,

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